MUSEUM STORIES FOR CHILDREN

Presented by

The James Nelson and Anna Louise Raymond Foundation
for Public School and Children's Lectures

Series XV, Number 1
October 4, 1930

FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

SAND DUNES

If you have ever tried to climb a Sand Dune or roll down one, you know what fun it is. The Sand Dunes nearest to Chicago are those at the head of Lake Michigan in Indiana. Perhaps you have been there, or if you are really fortunate your parents may have a cottage there where they take you to live in the summer. All along the south shore of the lake is the great fringe of Dunes—some of them just long ridges of sand, others conical, and some crescent-shaped. Whatever the form of the Dune it is certain to have a most interesting history.

The sand of the Indiana Dunes is composed mostly of tiny quartz grains which were formed by the breaking up of quartz or of such rocks as granite. After being carried by the glacier, rolled around by the waters of the lake, and blown by the wind the grains have become rounded and smooth. The term sand, however, refers to the size of the particles composing it rather than to the composition. The average size of the grains is one-fiftieth of an inch in the longest direction.

On the west side of the lake the waves and currents are continually cutting away the bank. The sand from the bank is carried southward until it reaches the end of the lake, where it is thrown up on the shore. As soon as it is dry the wind picks it up and blows it inland. The wind usually does not lift the sand very high. Instead it is carried along close to the ground, and as soon as the sand grains strike an obstruction they are dropped. Any object sufficiently large can cause the formation of a Dune, and once started it rapidly becomes larger. Mt. Tom near Waverly, Indiana, is 200 feet high.

Only a few Sand Dunes, however, have their origins from water-borne sand. In Nebraska and other parts of the west, also in Africa and central Asia, weathered sandstone furnishes the sand grains. When heavy winds blow, the sand is picked up and carried until an obstruction is encountered or the wind dies down, then the dropping sand will form Dunes just as before.

Most Sand Dunes really move. In Indiana the northwest winds, besides bringing more sand, blow the sand grains from the front of the Dune up over the top and they roll down the farther slope. That happens over and over again, and the Dune actually is moved along—progressing from five or ten feet to as much as one hundred feet a year. As the Dune moves farther and farther away from the lake the wind not only has less force, but the formation of new Dunes in the rear shuts off more and more of the wind. As the Dune moves more slowly grasses, bushes, and even trees begin growing on it, and in time there is enough

vegetation to hold the sand and stop its movement. Such a Dune is known as an old age or dead Dune. At the beginning it was a young, active Dune and it lived its life through just as we do from a youthful beginning to a ripe old age. As long as a Dune is moving, it is considered living—when vegetation has succeeded in stopping its movement, it is considered dead.

There is little chance of stopping a large moving Dune unless quickly growing grass can be planted on it. Usually the sand moves before the grass can root itself in, but if the Dune is migrating slowly enough the grass can establish itself and the sand is bound down so that the wind cannot lift it. In western France, Germany, Massachusetts, California, and other parts of the world, Sand Dunes have been conquered in such a manner. At other places they have defied man and often forced him to move. Forests have been covered by Dunes—sometimes completely—and after being hidden for years they may be revealed as dead forests when the Dunes move on and uncover them again. Instances of this may be seen at the Indiana Dunes.

In western Russia a little church was used until 1809 when a Sand Dune began drifting over it. Soon the church was completely covered and after several decades was forgotten. Shortly before 1860, however, the Dune had moved far enough away to completely uncover the church again.

Several noted explorers have found ruined cities of an ancient civilization in the deserts of central Asia. For centuries some of them had been concealed by Dunes which in moving on had uncovered the cities again. The Grand Calumet river formerly entered Lake Michigan in Indiana, but Sand Dunes so completely blocked its mouth as to reverse its drainage, and now it flows west instead of east, entering the lake at South Chicago.

In a few places Sand Dunes are regarded with affection instead of fear. Along the coasts of the Netherlands there is reclaimed land which is actually lower than the sea. Where Dunes exist it is not necessary to build dikes, and furthermore the Dunes are a better protection.

FRANKLIN C. POTTER, Guide-lecturer

Note: In Hall 35 there are three relief models showing Sand Dunes: Steep Coast and Dune Coast of the Sea, Relief Map of Nebraska, and a Relief Map of New Jersey. In the first the Dunes are very conspicuous, in the second they are labeled "Sand Hills," while in the New Jersey model they are found along the coast on the sand bars. In Hall 36 there are several trays containing Dune sand.

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STEPHEN C. SIMMS, Director

MUSEUM STORIES FOR CHILDREN

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October 11, 1930

FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

SEA PLANTS

If you lived near the sea, you would often see floating bits of odd-looking plants—unlike any seen in our fields and gardens. And could you visit the places where these sea plants grow, you would find them very interesting indeed.

Most of the plants of the seas are so small as to be seen only with a microscope; some have silica in their cell-walls and help to form vast deposits on the sea bottom; the largest of the sea plants are known as Seaweeds.

These are of many kinds, shapes and sizes. From the salty water in which they live they secure air and materials from which to make food. They have tough walls or "skins" which enable them to exist when the winds blow and the waves are rough.

Seaweeds have been known and used by man for a long time. The Japanese place brush heaps in shallow water for certain kinds to grow upon. The plants grow very rapidly. When fully developed they are harvested, dried and sent to markets. The eastern housewives use them for soups, as vegetables, for pickles and relishes and as a basis for jelly.

Until quite recently, large quantities of iodine and potash were made from seaweeds. The iodine was secured from the ashes of burned seaweeds or from liquids in which the seaweeds had been boiled.

Seaweeds grow wherever a good surface can be found. They start from spores, somewhat as do our common ferns, or from other bits of the parent plants. Old boat-hulls, sunken logs, submerged rocks or clusters of corals may provide suitable starting places.

Shallow waters near shores, where the tides rise and fall each day, have plants provided with a kind of gelatin to prevent loss of too much water when exposed to the wind, air and sun. They are green or brown in color.

Beyond the low tide water mark are found beautiful red algae which are finely divided and have the appearance of dainty, delicate ferns.

In contrast to these smaller seaweeds are the kelps—the best known of all the sea plants. They grow in much deeper water and frequently in rock crevices. At the time of storms, they are sometimes torn loose from their moorings, buffeted about in the water and finally carried to the shore.

The seaweeds making up the kelp group are coarse, brown plants which frequently grow to enormous sizes. In some areas they form

dense patches of vegetation. Along our own northwest coast grows a giant variety of kelp. It has a stalk often three hundred feet in length which carries at its end a large rounded air-vessel many feet long. Yet the stem of this giant kelp is so small that the Aleutian Indians use it as fishing lines. For some reason, the Russians call this seaweed "the sea-otter's cabbage."

Travelers in the East Indies often find queer-looking bird nests in caves along the shores. These nests are built by swallows and the material used in their construction is seaweed. These plants have a nutritious value, so the Javanese gather them and export them, especially to China where they are used in making the famous "bird's nest soup."

In the Atlantic, southwest of the Azores, is a famous area. It appears to one on a ship as a vast prairie of seaweeds. Farther than the eye can see a yellowish-brown mass covers the surface.

Columbus was the first to report a mass of seaweeds in this region. His sailors became alarmed when they beheld the great heaving mass and wished to turn back thinking they had come to the end of the ocean. They were sure dangerous rocks lay hidden under the plants and refused to go on until Columbus threw out over two hundred fathoms of line without touching bottom.

This Sargasso Sea, as it is called, is made up of swimming seaweeds which grow on the banks in the tropics, are torn loose and float about. The winds and currents carry them into the area mentioned above and there they continue to grow. The fronds of the plants look much like leaves and the plants carry berry-like air-bladders. Among the fronds live countless millions of marine animals who spend their entire lives within the area.

The next time you go to the seashore be sure to make a collection of the different seaweeds you find there. They make interesting specimens when dried.

MARGARET M. CORNELL, Guide-lecturer

Note: In the Hall of Plant Life on the second floor you will find many sea plants.

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STEPHEN C. SIMMS, Director

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FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

MUSQUASH THE MUSKRAT

We are apt to find Musquash, the Muskrat, where there is slow water with rushes or weeds.

This big water rat with the heavy body, short legs and flat scaly tail carried on its edge is one of the most valuable of our fur-bearing animals. The soft woolly under-fur is covered by rich brown outer fur, often an inch or more in length. The pelt is tanned and sold as "natural muskrat" or "Hudson Seal," "Plucked Beaver," "Wallaby," "Moleskin," "Sealskin" or "Otter."

The Muskrat is often called "The little brother of the Beaver" and its appearance and many of its habits resemble closely those of the latter.

When Musquash lives in water bordered by high banks, he digs a burrow in the side, which gradually slopes upward to the den. There are generally several passageways to the den, most of them being plugged. The entrance to the main burrow is under water and close to the bottom, so that it will not freeze shut in cold weather. Thus the Muskrat really enters his home through the basement. The den is well above the water-line in the bank, with a ventilator to the surface, generally hidden by a pile of sticks or grass. In the den is a large amount of grass and weed stalks. These serve as bedding and food.

If however Musquash lives in the region of rivers or marshes with low banks, he gathers coarse grass, reeds, sticks, roots and mud, and builds the dome-shaped house that so often tells us that he is there. The houses are begun in the summer. A place is selected in the rushes where the water is about two feet deep and the vegetation and mud dragged to the spot. In this way a little island of rubbish is gradually piled up and the water around deepened and cleared of rushes. As the island rises above the water-level, more plants and less mud are used. When it is a few inches above the water, a tunnel is dug from the bottom up to the surface of the mud island and into the thin plant covering. Every day a few more bundles of rushes and reeds are dragged onto the pile which by August is three or four feet high. If the roof of the center chamber crushes down under the weight, it is torn off from the inside as it gets too low. In time it stops sinking in, the floor is covered with several inches of material pulled off in heightening the roof, the chamber is enlarged, additional entrances are dug, the channel to each is deepened and the Muskrat's house, after a slow growth, is ready for the winter.

Each year two or three litters of blind, naked and helpless young are born in the lodge or bank nest, where they live contentedly with their parents until the following spring.

Musquash is not often seen during the day but if you sit near a colony on a warm, moonlight night you are almost sure to see him swimming across the pond, breaking the surface into silver V's and sending little, shining ripples dancing toward shore. Perhaps one climbs up to some favorite reed bed, log or rock to eat a dinner of reeds, lily roots, flags or nearly any green thing in the pond. The vegetable food is varied with clams, mussels and fish. Should an enemy appear or you stand up he dives with a loud splash, shattering the stillness and breaking the surface into a thousand wavelets.

When a Muskrat discovers danger he dives to safety. Of his many enemies, the Mink is the worst for it lives in the same places and can follow the Muskrat into his home, no matter how long or crooked is the underground trail to his door. On land, Weasels, Foxes, Wolves and Otters pursue him. In the air there are Hawks and Owls; in the water Pike and Pickerel.

During most of the year, Muskrat is content to stay close to home near his lodge or burrow. In the fall he becomes restless and starts out on his travels, exploring strange fields and meadows, until finally he finds the place that suits him best and settles down to months of living under the ice. When met during these wanderings, he shows great courage and will attack anything that gets too close.

There is an Indian legend that the Muskrat rendered a great service to Manabojou, the Sun-God, during the flood, so the Sun-God said, "You may have any part of the land to live in that you wish." The Muskrat took the deep lakes. But next day he came back and said, "I made a mistake; I want the grassy banks where there are green things to eat." These were given him. But the next day he was back again to say he was again mistaken, as he could not swim on the banks and he wanted the deep water again. Manabojou replied, "One day you want land, the next day, water. You do not know your own mind so I will decide. Henceforth, you shall live in the between-land of the marsh—neither land nor water—where there is long, green grass to eat and water deep enough to swim in." And so it has been ever since.

GORDON S. PEARSALL, Guide-lecturer

Note: In Hall 15 there are two cases containing Muskrat Exhibits. In Pullman Hall is the Chicago Mammal Case which also contains a Muskrat.

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STEPHEN C. SIMMS, Director

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FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

THE STORY OF BREAD

Bread has been used as food for many years. Just how long no one knows. Loaves of bread have been found in the Swiss Lake Dwellings and in Egyptian tombs. All other foods decayed.

The most important bread, both of the past and the present, is made from wheat. Who do you suppose first found out how to make it?

The growing of wheat has been an important occupation for centuries, but where wheat first grew is unknown. The Chinese people say wheat seeds were a gift to them direct from heaven. The ancient Egyptians claimed wheat originated with Isis, their goddess. People today believe that wheat was first grown in the Tigris and Euphrates valley. We can safely say that wheat has been our faithful servant for at least 6,000 years.

The Egyptians first perfected the making of bread. They mixed with their dough of wheat flour and water a little mash made from fermented barley sprouts. This acted as our yeast of today and made the bread rise and become light in weight. They called this bread "leavened bread." It was baked in many sizes and shapes—sometimes in the shape of animals.

There is an interesting story in the Bible in Exodus XII. The Jews escaped from Egypt where they had been servants and slaves of the Pharaoh. They left in great haste, "and the people took their dough before it was leavened, their kneading-troughs being bound up in their clothes upon their shoulders." Therefore their bread did not rise and was baked in flat cakes. Today the Jews celebrate this occasion, "The Feast of the Passover," by eating "unleavened bread."

The Egyptian baker's aim today is to bake the biggest possible loaf from the smallest amount of flour. The loaf is two pieces pinched together at the edges. When the loaf bakes, it rises and swells like a balloon; one would think it an enormous loaf of bread but what a fake. It is hollow in the center.

From Egypt the leavened bread spread to Greece and Rome. The Romans ground their wheat into flour in small mills. The Matron, or the slaves under her direction, mixed the dough in the home; then slaves carried it on a tray to the public bakery where the bread was baked.

Gradually "leavened bread" spread to other countries. In some it became the chief food, but in rural parts of a few countries bread is still made, without yeast, into flat cakes. Leavened bread is also unknown in the interior of China.

In the country parts of Sweden, bread is baked twice a year. This bread is made of rye, shaped into small cakes and is as hard as flint.

An interesting story is told of an English Captain who stopped in Gothenburg, Sweden, in 1812. There the Swedish baked just small cakes of bread. The Captain wanted some loaves of fresh bread and ordered the baker to bake him some to the value of a pound of sterling, or a little less than five dollars. The baker was astonished at this large order and the fact the Captain wanted loaves instead of cakes. He refused to bake the loaves until the Captain advanced the money because he would never be able to sell the loaves to his people.

In Norway, the bread is made of barley; the dough is rolled out into great flat, thin cakes. They are as thin as paper and as large around as tubs. Each cake is baked on a stone over a fire. Then all the flat cakes are piled up and stored in a dry place for the winter. That bread is the main food of the poor people.

In Mexico, the bread is made from Indian corn and is a sort of flapjack. They call each cake a "tortilla." If you ride through Mexico on a train you see Mexicans at the stations with their tortillas for sale.

In England, white bread was used only in the churches in the early days. After a time, the nobility was permitted to use it and still later the middle class. The poor people ate "black bread" made from barley or rye. The wealth and class of a person could be told by the kind and age of bread he ate. The royal family used freshly baked bread; the nobility received bread one day old; the gentry received bread two days old; the friars and scholars received bread three days old and the peasants received bread four days old. All the bread was baked in the Manor ovens and the Lady of the Manor distributed the loaves to the different classes. The word "Lady" means "loaf giver," coming from this old custom of giving out bread.

A great deal of bread is eaten in Spain. When Spaniards come to our country and see our thin slices of bread they are surprised and offended. In Spain, the absence of or small amount of bread on a table for guests is a breach in etiquette and very impolite.

MIRIAM WOOD, Guide-lecturer

Note: In Hall 2 is an old Roman mill used to grind grain into flour. In Hall 25 you may see the oldest wheat and barley yet found, a large loaf of rye bread from Russia, bread from Egypt, 3,400 to 3,900 years old, and some unleavened bread.

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FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

FROGS

Among the voices of early spring, none is more welcome than that of the frogs. Later when the birds have arrived and the air is a-tremble with their love songs, these coarser notes from the ponds are not such pleasing music to our ears.

Frogs are first cousins of the toads and second cousins of the salamanders. They belong to the cold-blooded, back-boned animals that live both on land and in the water.

Frogs are found in most parts of the world. In our own country they may be found wherever there is fresh or stagnant water. A few species live in partially dry regions. Some frogs spend most of their lives in the water, others live in the trees, while all, in our country, come back to the water during the breeding season.

The tree frogs are tiny fellows with sucker-like discs on the ends of their toes which enable them to climb trees and live among the branches. They are able to change their colors so that they look like the leaves or bark on which they are hiding. Some of the tree frogs of South America are poisonous and their bright colors warn even their enemies to let them alone. A curious use is made of the poison given off through the skin of a Brazilian species. Some of the feathers of the Amazon Green Parrot are pulled out and the skin rubbed with the poison. The new feathers which grow in are yellow, giving the bird a very peculiar appearance and it brings a high price in the market. In the forests of Borneo and the Philippines, lives a Flying Frog which has large hands and feet fully webbed. These are used as parachutes when it soars downward.

Many of us are familiar with the loud, trilling song of our Common Tree Frog which comes from the trees and bushes at dusk or during wet weather. Perhaps you may have a chance some day to see one singing with his throat sac extended and his body a-tremble. In the early spring the voice of the Spring Peeper welcomes the first flowers and birds. If you are not familiar with this little brown frog with the dark X markings on his back, you will find it difficult to believe that such a loud voice comes from a frog less than an inch in length. In May tree frogs go back to the water, where they mate and lay their eggs, attaching them to grasses or plant stems.

The true frogs vary in size from the tiny Cuban Dwarf Frog, of which it takes one hundred and fifty to make an ounce, to the Giant Frog of French West Africa. This frog is twenty thousand times as large as the Cuban Dwarf Frog.

The Leopard Frog is our commonest and most handsome frog. He is seen in woods and fields, often a long distance from water. If picked up and held firmly he starts to croak in a very decided but musical voice. If we go boating on a moonlight night in June we hear the deep bass voice of the Bullfrog calling "jug-o'-rum" or "better go round." He lives in the water and is the green dragon of the pond to fish, small turtles and even small frogs, as he eats every moving thing he can swallow.

In April or May frogs gather in the quiet places at the edge of the water to mate and lay from 2,000 to 8,000 eggs. Each egg hatches into a short, stumpy polliwog. In a few days he grows gills for breathing, a tail for swimming and hard mouthparts with which he gobbles up much mud for the small amount of food it contains. In seven or eight weeks he grows to a full-grown tadpole, swims to the edge of the pool and begins to sniff air into his tiny lungs. As he sniffs more air his lungs develop while his gills get smaller and finally disappear. His tail is absorbed into his body, his arms and legs grow and he is ready to live on land.

This froglet is still only as large as the end of your little finger, but has all the "earmarks" of a grown-up frog: a smooth, moist skin, large shining eyes, a big mouth, long tongue capable of being flipped out rapidly to catch his prey, small arms and hands with four fingers each and large, powerful jumping legs and feet with five webbed toes. Most of the time he lives among the grasses and rushes in the damp, marshy places near water. He feeds and grows through his first summer; then passes his first winter asleep, buried in the mud. The second summer he feeds and grows again and sleeps the next winter. The following spring he comes out for the first egg laying but he is not full grown until he is five or six years old.

He is not only interesting but useful for he captures thousands of mosquitoes and other insects that pester man and animals. Scientists sometimes think frogs were made especially for scientific uses and thousands of frogs are used yearly for all sorts of experiments. Thousands are also used for food and for bait by fishermen.

GORDON S. PEARSALL, Guide-lecturer

Note: In the west end of Hall 18 may be seen the Giant Frog, Cuban Dwarf Frog and many other interesting species.

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FIELD MUSEUM OF NATURAL HISTORY
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TOTEM POLES

Your family name, on the mail box at your door, shows where you live. In some parts of the world, families have other ways of telling about themselves. One of the strangest methods is by the use of totem poles.

The Indians and Eskimos of North America who make use of totem poles live on the northern Pacific coast and on the islands near it. To the east, high cedar-forested mountains rise steeply from the narrow coast, and on the west is the ocean. It is a stormy country. Winds among the trees, and waves make strange and dreadful noises. There are dangerous creatures in forest and sea—bears, wolves, sharks, killer-whales; and creatures that seem mysteriously wise—the beaver which makes wonderful houses in the water, and the raven, a bird like the crow but much larger, which flies about the Indians' villages and appears to visit them in friendly fashion. In former times it seemed to the people of this region that the world was full of powerful spirits which they heard in storm noises and saw in trees, rivers, rocks, birds, and animals of sea and land. They believed that the spirits were sometimes dangerous and harmful, as when a man was killed by a fierce bear, or drowned when the storm waves upset his canoe; and sometimes helpful, as when the salmon swam up rivers so that the Indians could easily catch and eat them.

The Indians thought that each family was related to at least one of these spirits. Families among them are still known by the names of their spirit relatives, called their "totems." Usually the totem is an animal. All persons who have the same totem are considered to be related, and bound to help each other. If a man visits a strange village, he goes at once to the house of a family of his totem, knowing that he will be received as a brother, even if the people have never seen him before.

A man in a strange village has no trouble in finding his own group. In front of each house stands a post or pole, carved and painted with the totems of the people who live there. If a man of the Raven totem has a wife of the Bear totem, the pole before their house may have a raven at the top and a bear at the bottom. Perhaps there may be one or two cubs with the bear, to show that there are children in the family, for in many tribes children belong to their mother's rather than to their father's totem group.

Some poles show only totems, but more have other figures carved in the space between their places at top and bottom. A few of these are simply ornamental, but most refer to some old hero story connected with the family, or to some important happening of recent times. On one pole the figure of a raven with the moon in its beak suggests the story that the world was in darkness till the friendly and clever raven stole daylight from its hiding place on the other side of the sky, and put the sun, moon, and stars where they are now. People of the Raven totem are naturally proud of this story.

Occasionally figures on totem poles make fun of certain people. For instance, it was an old custom among the Haida tribe that a man who refused to pay his debts might expect to see his own face represented, upside down, among the carvings of the lender's totem pole. Thus the whole village learned that that man was not to be trusted. Naturally it seldom happened that a Haida villager failed to repay what he borrowed.

Besides totem poles before the houses, and carved posts that support the roof beams inside, there are carved poles set up after funerals, as memorials to the dead, and carved grave posts in cemeteries. Huge figures of the totem animals sacred to important people are often placed near their houses or their graves. All these poles and carvings were originally painted in many colors, but old ones have long since had all the color worn off by wind and rain. Weatherworn and gray, they are still monumental works of art, and give the villages of the totem pole peoples a charm and strange beauty found nowhere else in the world.

JUNE WORK, Guide-lecturer

Note: In Hall 10 are many carvings made by the totem pole Indians. Look carefully at the small model of a Kwakiutl house, which shows the carved posts inside as well as the totem pole in front, the large, old, Haida carving of a frog totem, and the many carvings in the adjoining passageway.

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FIELD MUSEUM OF NATURAL HISTORY
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VOLCANOES

Living as we do in a region lacking volcanoes, it is not necessary for us to fear them, but in many parts of the world volcanoes are of great importance to their human neighbors. Many people think of them as wholly bad, and although some of them do great damage they are of some benefit as well. Volcanic dust and soil formed by the decay of volcanic lavas are usually more fertile than most other soils. In many regions people have farms on volcanic soils and in Italy vineyards occupy the very sides of volcanoes.

You would probably like to know what causes volcanoes. Just think how heavy all the rocks above us would be if we could go about fifty miles down into the earth. They would press down so hard on the rocks that are still deeper that if the deeper rocks had room enough they would melt. Melting rarely happens, though, because melted rocks take up more room than solid ones. When melting does occur the liquid rock is forced to the surface of the earth, because the fewer the rocks above, the less the pressure. When the melted rock, which we call lava, reaches the surface we have a volcano.

Not all volcanoes are cone-like mountains. Some are just openings in the ground from which lava flows. In Iceland there are in twenty miles more than one hundred such openings. In parts of California, Oregon, Washington, and Idaho there must have been an even greater number of openings, for 225,000 square miles (four times the area of Illinois) are covered with a layer of lava almost one-half a mile thick.

Some volcanoes cause a great deal of fuss, others are very quiet. If there is much gas and steam in the lava and the rock is only partly melted, the volcano is apt to be very violent, because as the gas and steam are forced upward they shoot dust, ash, cinders, bombs, and blocks of rock high into the air. If there is little gas or steam and the rock is composed of minerals which melt easily, the lava will quietly flow out of the volcano until it has cooled and then, of course, stop flowing and harden into rock again. A few volcanoes have exploded with force strong enough to break their cones into tiny pieces which were hurled for thousands of miles.

There are between 300 and 400 active volcanoes on the earth and most of them are on land close to the Pacific Ocean. Active volcanoes may rest much of the time, whereas dead ones—as far as we know—will

never erupt again. Marine volcanoes often begin in very deep water and so much lava is emitted that they may be built as high as the top of the ocean, or even higher. Iceland, the Canaries, and the Hawaiian Islands were formed in such a manner. Some volcanoes are very small; the largest active one is Kilauea in Hawaii, its crater—the open pit in the center—being two and one-half miles wide. The largest extinct one, with a crater seven and one-half miles long by more than two miles wide, is also in the Hawaiians. If some of the pits on the moon that we think are volcanoes, really are, they are the largest known, as a number of them exceed fifty miles in width, one measuring 114½ miles.

There are many famous volcanoes, such as Vesuvius, Stromboli, Etna and Katmai. Vesuvius, erupting in the year 79, buried the cities of Pompeii and Herculaneum so completely under thirty to sixty feet of mud and ash that for 1,600 years their very sites were forgotten. Since then it has erupted a number of times. Katmai in 1912 spread so much hot mud and ash in Alaska that the "Valley of Ten Thousand Smokes" is still smoking. On the West Indian island of Martinique a cloud of hot gas from Mt. Pelée killed all but two of St. Pierre's 30,000 inhabitants in 1902. When Krakatao, in the East Indies, blew up, ash was hurled seventeen miles high and two-thirds of the island was actually blown into bits.

Is it any wonder that some of the East Indian natives make offerings to the gods of the volcanoes to appease their wrath, or that the Italians place statues of the saints in front of flowing lava streams in vain efforts to stop the destruction?

FRANKLIN C. POTTER, Guide-lecturer

Note: Field Museum has a number of exhibits relating to volcanoes. In Hall 35 are relief models which show a Volcanic Island, Mt. Shasta, Etna, the Volcanoes of Central France, the Hawaiian Islands, and the Moon; also two cases of volcanic materials such as bombs, lava, and ash. In Stanley Field Hall there is one case containing volcanic material from Mt. Taylor, New Mexico.

Save your Museum Stories. You will find them useful for looking up things you may want to know.

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It is free to adults on Thursdays, Saturdays and Sundays.

STEPHEN C. SIMMS, Director

MUSEUM STORIES FOR CHILDREN

Presented by

The James Nelson and Anna Louise Raymond Foundation
for Public School and Children's Lectures

Series XV, Number 8
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FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

THE TAJ MAHAL

About three hundred years ago, there lived a king in India who was known as Shah Jahan. He lived in a great and splendid palace, with a moat around it and a drawbridge over the moat.

There were many other beautiful buildings in his capital city of Agra. There were palaces of princes and lords, and great mosques, or Mohammedan churches, with high domes and slender towers called minarets. There were wide streets, with shops on either side. Many of them were kept by merchants from distant lands, who came to Agra because they knew that Shah Jahan's people had money to pay for the silks, jewels, and other beautiful things which they had to sell.

There were beautiful gardens in the city, too, with flowers, trees, and fountains. None was more lovely than those of Shah Jahan's palace. Here the king spent many happy hours with his wife, Arjumand Banu. People usually called her Mumtaz Mahal, which means "The Chosen of the Palace." Shah Jahan had married her long before he became king, and she had been with him constantly. Even when he went to war, she had followed, living with him in his soldier's tent.

When she became queen, she often helped her husband with wise advice about the government of his great kingdom. More often, no doubt, she talked with him of their children, for they had fourteen sons and daughters. They both enjoyed trees and flowers, and old stories say that sometimes they amused themselves with a contest to see who could plan the loveliest garden.

These happy times did not last many years. Not long after she became queen, Mumtaz Mahal died. It seemed to Shah Jahan then that it might help his grief and loneliness to build a monument by which people might remember his wife forever. He decided that her tomb should be the most beautiful building in the world.

So he sent for the best master-builders and artists of India and of other countries of Asia. It is said that one architect came from Venice, in Italy, and a goldsmith from far-away France. Then pictures of the most beautiful buildings in the world were given to these men to study and compare. They worked for many days to make a new plan which should satisfy the king. It must be something finer than any that had been constructed before. This was not to be a castle for fighting men, nor a place for working or buying and selling. It was to be all for dreams and memory, a building as graceful and charming as the queen herself. There must be no sharp lines, no hardness or heaviness of color

or form, but softly curving, lightly lifting grace of pure white marble, with touches of bright and dainty color. At last, after long study and much thought, the men worked out a plan which pleased Shah Jahan, and made a small wooden model from which the masons, carpenters, and artists were to work.

Such a monument was not to be finished quickly, even though a powerful king paid some twenty thousand men to work on it daily. No one was hurried over this work which was to last for all time, for everything must be done carefully and perfectly. As the masons raised walls and arches and domes of finest white marble, goldsmiths and jewelers decorated them with inlays of red and brown carnelian and agate, blue lapis lazuli, and other precious stones. Many of the workers were famous artists who were paid a great deal of money.

Four men, famous for their skill in beautiful writing, designed borders of verses from the Koran, the Bible of the Mohammedan religion, in which the queen had believed. These were inlaid on the white walls in fine lines of black marble.

At last, after twenty-two years, the building was finished, inside and out. It stood in a marvelously beautiful garden, surrounded by a wall of red sandstone, and planted with the flowers and trees the queen had loved best. About the building were marble pools of clear water which reflected the great dome and slender minarets among floating lotus flowers.

In the high central chamber were placed two plain white cenotaphs, or false tombs, and below them, in a vault, was laid the queen's coffin, which had been waiting in a temporary tomb in a lovely garden. When Shah Jahan died, his body was placed beside hers.

Travelers to India still visit the lovely old city of Agra, to see the splendid buildings of the days of Shah Jahan. Above all, they admire the Taj Mahal, or tomb of Mumtaz Mahal. After three hundred years, it still reminds people, as the king intended, of the story of Shah Jahan and his love for his beautiful queen.

JUNE WORK, Guide-lecturer

Note: In Hall E of Field Museum is a model of the Taj Mahal, carved from white alabaster, by an artist of India.

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STEPHEN C. SIMMS, Director

MUSEUM STORIES FOR CHILDREN

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The James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures

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FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

First Photoplay

"The Puritans"*

The following facts lead up to the play:

During the reign of Charles I, of England, many people became dissatisfied with the harsh rule of the king. He punished those who disagreed with his government and those who would not follow the established religion of England.

Under the leadership of John Winthrop, a group of Puritans, numbering nine hundred in all, set sail in eleven ships for America.

On June 12, 1630, they arrived at Salem. Soon others joined them and they formed the Massachusetts Bay Colony. They had with them a royal charter giving them the right to elect their own governor.

At Merrymount, not far from Salem, lived a wild gang of traders under the leadership of Thomas Morton.

CHARACTERS

GOVERNOR WINTHROP

MARGARET WINTHROP

JOHN COTTON

THOMAS MORTON

ARCHBISHOP LAUD

ROGER WILLIAMS

SIR HARRY VANE

ANNE HUTCHINSON

*Gift of Mr. Chauncey Keep to the Museum.

Second Photoplay

"Peter Stuyvesant" *

The following facts help explain the play:

In 1607, Henry Hudson discovered and made known to the world the river which bears his name. At the time, he was searching for a short route to China by way of the North Pole.

In 1611, he was cast adrift upon the frozen waters of the north by a mutinous crew and nothing was ever heard of him again.

The Dutch insisted that his discovery of the river gave them the right to claim the land. So in 1611, a settlement was established at the mouth of the river and called New Amsterdam or Manhattan. This was the beginning of the city now known as New York.

In 1647, Peter Stuyvesant became governor. He has been called the "valiant, weather-beaten, mettlesome, obstinate, leather-sided, lion-hearted old governor."

CHARACTERS

Peter Stuyvesant	Lord Clarendon
Charles II	Nicasius de Sille
Duke James	The Stuyvesant Boys
A Fop	The King's Favorite

*Gift of Mr. Chauncey Keep to the Museum.

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STEPHEN C. SIMMS, Director

MUSEUM STORIES FOR CHILDREN

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The James Nelson and Anna Louise Raymond Foundation
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FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

THE STORK

A stork poised on one leg, back arched and long bill on its breast is a familiar picture to most people; it is perhaps one of the best known of foreign birds.

The common stork is the White Stork of the Old World. It is not entirely white, however, having black wing coverts, a dark red bill, reddish-pink legs and black claws.

In March and April great flocks of these storks fly north from Africa and Egypt to the central part of Europe, especially Germany and Holland. They fly at great heights in V-shaped formations, each stork flying with neck thrust forward and legs stretched back, making just a slight curve. They remain in the north until August when they gather in flocks to fly back south for the winter.

The people love these beautiful birds and protect them. For this reason storks seek the cities in which to build their nests. They walk with fearless confidence in the busy streets of large towns. They construct their nests of sticks and reeds and place them on the high steeples and roofs. Indeed, it is quite an honor to have a stork build on the roof. Boxes, cartwheels and other devices are placed on the roofs to entice the storks to stop there.

Sometimes when suitable roof sites are not available trees or even rocks are used as nesting places. The same nest is used year after year with very little change in structure except for the addition of a few twigs. Thus, the first year nest is shallow while an old nest will be several feet in height. It is said, some nests have been inhabited every year for over a century.

Three to five young storks are raised each year in these lofty nests. The parents bring them food such as frogs, snakes, lizards and insects. The food is scattered in the nest and the youngsters scramble for it. These little storks walk on their heels although it looks as if they were walking on half their legs. Balancing seems to be rather difficult for them especially when a strong wind threatens to topple them from their nest. There is no roof to this tree-top-home; the rain pours down on the babies and runs off their backs without doing any harm.

The stork never sings. The only sound is a clatter made by beating the huge mandibles together or an occasional hiss. Besides being a

silent bird it is usually a very dignified bird. It walks with a slow pace when in the meadows and streets or quietly soars in great circles in the sky. However, in the spring the father stork is often not dignified nor is he quiet. At this time he leaps from the ground with wings outstretched and clatters noisily. These grotesque gestures form a sort of dance to attract the attention of the mother stork.

In many countries the stork has almost a superstitious meaning. One would never dare molest a stork in Holland as that would bring bad luck, the people think.

In some parts of Germany the people believe a stork never nests on a bad man's house. If a man were suspected of some crime and a stork nested on his home, he would be freed immediately.

The Mohammedans cherish the stork and call it "friend" and "brother."

An old Greek law forcing children to support helpless parents originated from stork habits. The Greeks noticed that the young storks brought food to old ones who were feeble or sick.

The Wends of Spreeland, who have lived in Germany from ancient times, are especially fond of the stork. They believe that at the creation of time the birds of the world chose the stork as king and that the stork is able to think and could converse with man if only its tongue were longer.

There are other storks besides the White Stork although not so common nor so well known. There is the Japanese Stork from Japan, Korea and Siberia; the Black Stork from Asia; the "Shoe-billed" Stork from Arabia; the Marabou Stork from India; the White-necked Stork from Africa and the Maguari Stork from South America.

MIRIAM WOOD, Guide-lecturer

Note: In Hall 21 you may see the common White Stork from the Old World and the Maguari Stork from South America.

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